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Cooperative Economic Insect Report

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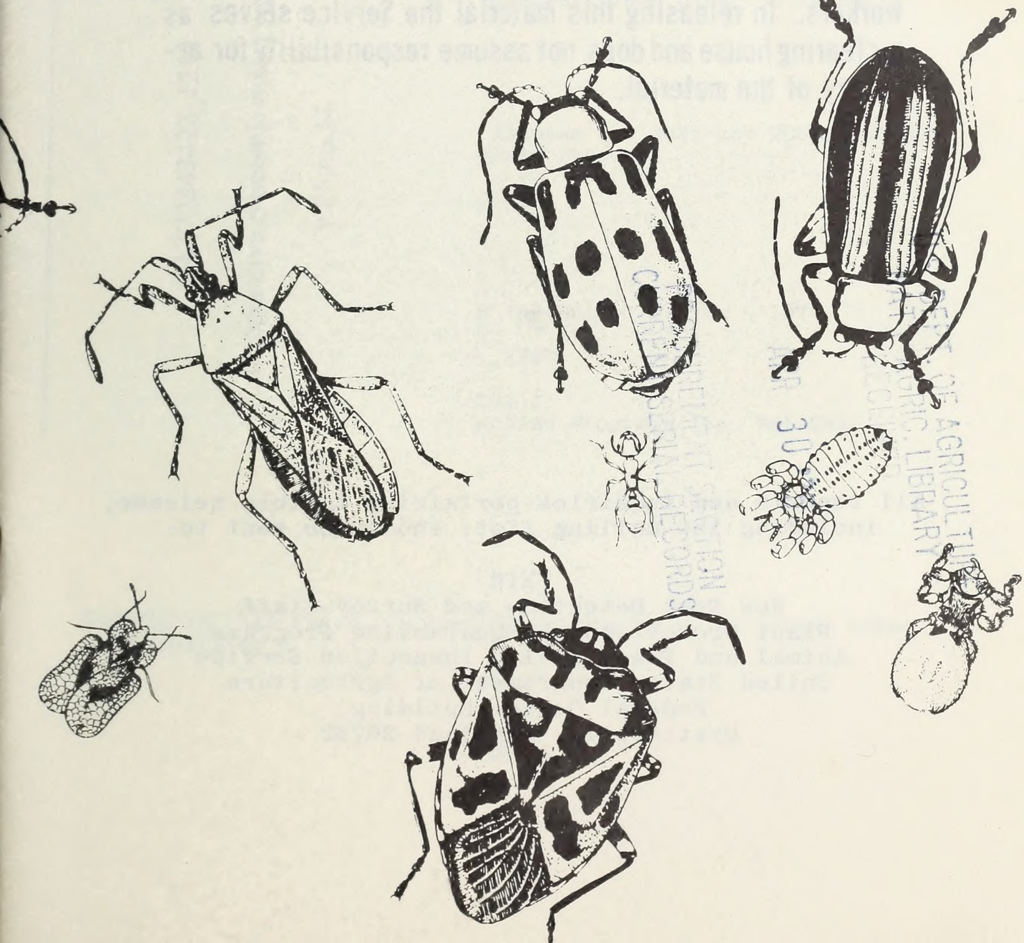

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CURRENT SERIAL RECORDS

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
NEW PEST DETECTION AND SURVEY STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 25 April 4, 1975 Number 14

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMY CUTWORM of concern on small grains in east-central New Mexico, heavy on wheat in western Rolling Plains of Texas. CORN LEAF APHID heavy in small grains in southeast New Mexico. GREENBUG scattered and heavy on wheat in Panhandle and southeast areas of Oklahoma, ranged light to heavy in small grains in Rolling Plains of Texas. (p. 265).

Pupation of overwintering EUROPEAN CORN BORER larvae reported in Delaware. (p. 266).

ALFALFA WEEVIL larvae active in alfalfa from Texas to Illinois, and some infestations reported above economic threshold in Virginia. (pp. 266-267).

Prediction

Some heavy cropland GRASSHOPPER infestations expected in South Dakota this season. (p. 268).

Detection

An ORTHEZIID SCALE reported in Alabama (p. 268) and HOUSE CRICKET in Wisconsin (p. 279) are new State records.

For new county records see page 271.

Special Reports

Summary of Insect Conditions in the United States - 1974.
  Man and Animals (pp. 272-279).
  Households and Structures (p. 279).
  Stored Products (p. 279).
  Beneficial Insects (pp. 280-281).
  Federal and State Plant Protection Programs (pp. 281-284).

Reports in this issue are for week ending March 28 unless otherwise indicated.

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NATIONAL WEATHER SERVICE 30-DAY OUTLOOK

APRIL 1975

The National Weather Service's 30-day outlook for April is for temperatures to average above seasonal normals in the Atlantic Coast States. Below normal averages are indicated from the north and central Pacific coast eastward through the northern and central Great Plains to the upper Mississippi Valley. In unspecified areas near normal temperatures are in prospect. Precipitation is expected to exceed the median value over most of the Nation except for the New England coast, the southern Great Plains, and most of both the Great Basin and the West Coast States.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (*Euxoa auxiliaris*) - NEW MEXICO - Maturing larvae continued to cause much concern in Roosevelt and Curry Counties. Some damage to small grain reported along field edges; however, pupation underway. Outbreaks in Lincoln and Chaves Counties do not appear to be as widespread as initial estimates indicated. (N.M. Coop. Rpt.). TEXAS - Heavy populations fed on wheat in parts of Motley and Jones Counties. (Boring).

ARMYWORM (*Pseudaletia unipuncta*) - TEXAS - Light to moderate populations reported in Pecos County alfalfa. (Neeb).

CORN LEAF APHID (*Rhopalosiphum maidis*) - NEW MEXICO - Over 500 per linear foot noted on small grains in Chaves and Eddy Counties. Some leaf curl and much yellowing associated with feeding noted in one field of oats. (N.M. Coop. Rpt.). TEXAS - Light activity on grain sorghum observed above southern part of south-central area. (Cole).

GREENBUG (*Schizaphis graminum*) - NEW MEXICO - Populations remained light in eastern areas. Some areas show increased local activity; however, lady beetle activity also increased in these areas. (N.M. Coop. Rpt.). OKLAHOMA - Scattered heavy infestations present in wheat in Texas, Beaver, and Harper Counties. Ranged 100-400 per linear foot in Harper County. Fields treated in Harper County as weather permits,but only irrigated fields treated in the Panhandle counties (in most cases) due to dry conditions. Scattered heavy infestations continued in Tillman and Jackson Counties, but infestations moderate in Comanche County and light in Kiowa County. (Okla. Coop. Sur.).

TEXAS - Greenbug light to moderate, ranged up to 145 per drill row foot of small grains in Archer, Childress, Cottle, King, Fisher, Knox, and Throckmorton Counties. Moderate to heavy, 146-500+ per drill row foot, in Baylor, Foard, Hardeman, Haskell, Jones, Wichita, and Wilbarger Counties. Very light to heavy, 800-1,000 per drill row foot, reported damaging wheat in Hale County. Parasitic wasps preyed heavily on greenbugs in fields in Archer, Baylor, and Hardeman Counties. In some fields, 5-36 parasitized greenbugs observed per drill row foot. Light populations of lady beetles and spiders preyed on greenbugs in some fields in Archer, Baylor, Throckmorton, and Wilbarger Counties. Parasites and lady beetles in Hale County ranged light to moderate with some control observed. (Boring, Latham).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - FLORIDA - About 400 specimens collected in 100 sweeps of alfalfa at Gainesville, Alachua County, March 21. (Fla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - TEXAS - Very light on grain sorghum in Brazos County. (Cole).

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - Pupation of overwintering larvae underway in Sussex County. About 2 percent of borers in corn stubble completed pupation. (Kelsey).

CHINCH BUG (Blissus leucopterus leucopterus) - TEXAS - Reported from sorghum in Calhoun County. (Cole).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - MISSISSIPPI - Populations increased rapidly on Oktibbeha County wheat during warm weather. (Robinson). FLORIDA - About 120 specimens collected in 100 sweeps of oats at Gainesville, Alachua County, March 21. (Fla. Coop. Sur.).

AN APHID (Rhopalosiphum padi) - TEXAS - Populations in Hale County ranged 0-200 per drill row foot. Light populations reported from several small grain fields in Rolling Plains area. (Latham, Boring).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Populations still light in most small grain fields in Archer, Baylor, Haskell, Knox, and Throckmorton Counties. Infestations of 300 per drill row foot reported from three Foard County fields. (Boring).

TURF, PASTURES, RANGELAND

CHINCH BUG (Blissus leucopterus leucopterus) - KANSAS - Results of winter survey conducted from late February to mid-March showed areas having heaviest hibernating population in bunch grass to be similar in 1975 as in 1974. Individual bunch grass samples having populations in moderate or severe range found only in Washington, Marshall, Brown, McPherson, Harvey, and Sedgwick Counties. Total of 52 counties included in survey and 4 bunch grass (nearly all little bluestem) samples usually taken per county. Results indicate scattered economic infestations may occur in seedling corn and sorghum in some counties. (Bell).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - TEXAS - Larvae ranged up to 10 per square foot in Hale County area alfalfa. (Latham). OKLAHOMA - Terminal infestations ranged 50-100 percent (1-10 larvae per terminal) in Pawnee County alfalfa. Small larvae moderate in Osage County. (Okla. Coop. Sur.). KANSAS - Hatch and larval populations becoming significant in some alfalfa in counties bordering Oklahoma in southeast district; feeding injury not very noticeable since most larvae in fields still first and second instars. Predominating cool weather retarded hatching, larval development, and feeding damage although intermittent periods of mild weather resulted in some egg hatch as far north as Shawnee County and west as Gray County. Very little adult activity noted in fields checked. Some specimens noted leaving hibernation quarters in garage in Finney County March 17. Light populations of hibernating adults found in samples of little bluestem bunch grass taken in Mitchell, Nemaha, Geary, Osage, and Reno Counties from late February to mid-March. (Bell).

ILLINOIS - Occasional first and second-instar alfalfa weevil larvae found in Washington County feeding in alfalfa stem tips; averaged less than one per 50 stem tips. Populations light; in 9 of 10 fields surveyed, no larvae noted. Alfalfa 2-4 inches tall. (Cooley). VIRGINIA - Based on 9 alfalfa fields sampled (106 acres), 20 percent of tips infested. Average estimated defoliation 1.67 percent. Specimens still too small to cause serious damage and growers advised not to treat until damage greater than indicated above. Two fields (22 percent of sample) above economic threshold with 25 of 50 tips infested. Fourteen percent of acreage above economic threshold. (Allen).

TENNESSEE - Alfalfa weevil larval population increased in middle and western areas. All fields surveyed below control levels. Larvae ranged 0-40 per 50 alfalfa tips in fields surveyed. Some fields expected to reach treatment levels in 7-10 days. (Gordon, Bruer). MISSISSIPPI - Adults, 3 per 25 sweeps, taken from crimson clover in Oktibbeha County. This is first collection of adults from this field this year. (Robinson).

CLOVER LEAF WEEVIL (Hypera punctata) - KANSAS - Generally light larval populations (up to half-grown) found in many alfalfa fields in southeast, east-central, south-central, and southwest districts. Some overwinter as partially grown larvae in alfalfa and, especially early in growing season, are often confused with Hypera postica (alfalfa weevil) larvae. (Bell).

PEA APHID (Acyrthosiphon pisum) - NEVADA - Increased on alfalfa hay at Virgin Valley, Clark County; averaged 100 per sweep. (Hoff). ARIZONA - Averaged 2,000+ per 10 sweeps on alfalfa seed block at university experiment station in Yuma County. Lighter populations noted in other plots. Treatments to be applied when winds subside. (Ariz. Coop. Sur.). KANSAS - Light in alfalfa in southeast and south-central districts. (Bell). FLORIDA - About 3,000 specimens collected in 100 sweeps of alfalfa at Gainesville, Alachua County, March 21. (Fla. Coop. Sur.).

TOBACCO

GRANULATE CUTWORM (Feltia subterranea) - NORTH CAROLINA - Spot damage by this species and Agrotis ipsilon (black cutworm) occurred in tobacco plant beds in Wilson and Lenoir Counties. (Hunt).

DECIDUOUS FRUITS AND NUTS

EASTERN TENT CATERPILLAR (Malacosoma americanum) - MISSISSIPPI - Tents increased in size and number on wild cherry and plum in southern half of State. (Robinson).

GREEN PEACH APHID (Myzus persicae) - TEXAS - Moderate to heavy on plum trees in Pecos, Reeves, Ward, and Winkler Counties. (Neeb).

PECAN NUT CASEBEARER (Acrobasis nuxivorella) - NEW MEXICO - First-generation larvae noted feeding on pecan buds at Carlsbad, Eddy County. (N.M. Coop. Rpt.).

CITRUS

CITRUS RED MITE (Panonychus citri) - ARIZONA - Averaged 50 per leaf in one Yuma County grove, treatments planned. Mites averaged 12 per leaf in nearby grove. (Ariz. Coop. Sur.).

ORNAMENTALS

AN ORTHEZIID SCALE (Orthezia tillandsiae) - ALABAMA - Taken on Spanish moss at Elm Bluff Hunting Club, Dallas County, January 18, 1975. Collected and determined by M.L. Williams. This is a new State record. (McQueen).

FOREST AND SHADE TREES

SPRING CANKERWORM (Paleacrita vernata) - INDIANA - First male moths of season observed March 23 in Tippecanoe County. (Chandler). KANSAS - Male moth flights and female activity very heavy in parts of Garden City, Finney County; Manhattan, Riley County; Rossville and Topeka, Shawnee County. (Bell).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - NORTH CAROLINA - First webs observed from Wake County eastward and southward. This is about 14 days later than in 1974. No webbing observed west of Wake County but expected by first week of April. Hatching of this insect is indicator of Porthetria dispar (gypsy moth) hatching dates. (McIntyre, Hunt). KANSAS - First of season, eggs hatching on black cherry in Cherokee County. (Bell).

MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - Total of three cases reported from continental U.S. during period March 16-22, all from Texas. Total of 137 cases confirmed from Mexico. Number of sterile flies released in U.S. this period totaled 21,968,000, all released in Texas. Total of 112,572,000 sterile flies released in Mexico. (Vet. Serv.).

COMMON CATTLE GRUB (Hypoderma lineatum) - TEXAS - Adults observed on cattle in mountain areas of Brewster and Jeff Davis Counties. (Neeb).

HORN FLY (Haematobia irritans) - MISSISSIPPI - Adults averaged 10+ per cow in Amite County, 25+ per head in Oktibbeha County, and 10+ per head in Monroe and Chickasaw Counties. (Robinson).

FACE FLY (Musca autumnalis) - TENNESSEE - Heavy populations became nuisance in and around homes in several localized areas of central part of State. Flies found on sunny sides of light colored homes. (Gordon, Bruer). MISSISSIPPI - Thousands of over-wintering adults resting on buildings, fence posts, and automobiles near overwintering sites in Monroe and Chickasaw Counties. Collections show 95 percent males. Up to 20 flies per face noted on cattle in nearby pastures. Sex determinations of flies on faces of cattle and those visiting manure indicate 3:1 ratio of females to males. This is first report of season. (Robinson).

A MOSQUITO (*Anopheles punctipennis*) - INDIANA - Adult female collected while feeding outdoors in Tippecanoe County March 20. This is a rather early record. Determined by D.P. Sanders. (Chandler).

NORTHERN FOWL MITE (*Ornithonyssus sylviarum*) - MISSISSIPPI - Light, averaged less than 5 per bird, on white leghorns in Oktibbeha County. (Combs).

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (*Reticulitermes* spp.) - OKLAHOMA - Winged reproductives swarming in Payne and Tulsa Counties. (Okla. Coop. Sur.).

CASEMAKING CLOTHES MOTH (*Tinea pellionella*) - ALABAMA - Infested three Lee County homes, treatments difficult. (McQueen).

STORED PRODUCTS

LESSER GRAIN BORER (*Rhyzopertha dominica*) - MINNESOTA - Very heavy in some stored barley seed. Beetle and larval concentration so great bags felt warm. Weight of some bags reduced by 50+ percent and grain discarded. (Hoger).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (*Hippodamia convergens*) - ARIZONA - Larvae averaged 20 per 10 sweeps in one alfalfa plot at Yuma, Yuma County. (Ariz. Coop. Sur.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - OKLAHOMA - Limited egg pod surveys week of March 3 in Beaver, Woodward, Dewey, and Roger Mills Counties averaged 0.75 viable egg pods per square yard. All egg pods in clear stage and very little parasite and predator damage noted. (Okla. Coop. Sur.). SOUTH DAKOTA - Heavy cropland infestations expected in many areas east and west of Missouri River during 1975. (Walgenbach).

WHITEFRINGED BEETLES (*Graphognathus* spp.) - ALABAMA - Larvae heavy and damaged 3-acre ryefield near Madrid, Houston County. Larvae ranged 2-3 per hill or clump of rye. This is first report of season. (Roney).

HAWAII INSECT REPORT

General Vegetables - GREENHOUSE WHITEFLY (*Trialeurodes vaporariorum*) heavy on small snap bean planting at Waiahole Oahu; 60-80 percent of lower surface of leaves covered with immatures or adults. Honeydew from immatures observed on numerous leaves. Light infestation of adults and eggs noted on cucumber planting in same general area. BEAN POD BORER (*Maruca testulalis*) heavy in small snap bean planting at Waiahole; 30-40 percent of pods showed damage. Although this pest can be serious on beans, species normally not found in commercial plantings. TARO LEAFHOPPER (*Tarophagus proserpina*) immatures and adults light in several acres of taro at Waihee, Maui; 2-7 leafhoppers found per leaf sheath. (Nakao, Miyahira).

Fruits and Ornamentals - Subtle increases in BANANA SKIPPER (*Erionota thrax*) observed at Pearl City and Honouliuli evaluation sites on Oahu. Corresponding parasite activity appears lighter than previous months. Situation to be monitored. Slight *E. thrax* population rebound expected after control achieved due to parasite mortality or emigration. *E. thrax* moderate in one acre of banana at Wailuku, Maui; 12 eggs recovered. Larvae ranged 2-12 per plant; 90 percent of plants (3-6 feet tall) infested; 75 percent defoliation noted on few young plants; damage negligible on older plants. (Nakao et al.).

Man and Animals - MOSQUITO collections from 74 light traps operated on Oahu during February totaled 634 *Aedes vexans nocturnus* females and 3,901 *Culex pipiens quinquefasciatus* females. *Aedes* females averaged 8.6 per trap, *Culex* females averaged 52.7 per trap. (Vector Control Br., State Dept. Health).

Beneficial Insects - Evaluation surveys conducted at Waiahole, Oahu, indicated that an ENCYRTID WASP (*Ooencytus erionotae*), an egg parasite, and a BRACONID WASP (*Apanteles erionotae*), a larval parasite, have controlled *Erionota thrax* (banana skipper) infestations throughout the 10 to 15-acre banana planting. Infestation first detected in September 1974 when tree infestation was 100 percent and 85 percent defoliation was observed. Egg and larval parasites were released weekly during September and early October 1974. Survey during March 1975 indicated *E. thrax* damage may remain for several months after control has been achieved. Infestation indices were relatively high; 70-75 percent of trees damaged, 40-45 of foliage damaged. New indices may be needed to accurately depict *E. thrax* abundance. (Mau).

DETECTION

New State Records - HOUSE CRICKET (*Acheta domesticus*) - WISCONSIN - Langlade County. (p. 279). AN ORTHEZIID SCALE (*Orthezia tillandsiae*) - ALABAMA - Dallas County. (p. 268).

New County Records - A EULOPHID WASP (*Tetrastichus incertus*) NORTH CAROLINA - Buncombe (p. 280). AN ICHNEUMONID WASP (*Bathyplectes curculionis*) NORTH CAROLINA - Macon, Buncombe (p. 280).

LIGHT TRAP COLLECTIONS

ARIZONA - Mesa, 3/17-23, BL, ARMY CUTWORM (*Euxoa auxiliaris*) 7, BEET ARMYWORM (*Spodoptera exigua*) 24, BLACK CUTWORM (*Agrotis ipsilon*) 1, CABBAGE LOOPER (*Trichoplusia ni*) 2, VARIEGATED CUTWORM (*Peridroma saucia*) 44, YELLOWSTRIPED ARMYWORM (*S. ornithogalli*) 2. FLORIDA - Gainesville, 3/21-26, BL, ARMYWORM (*Pseudaletia unipuncta*) 1, GRANULATE CUTWORM (*Feltia subterranea*) 4, SALTMARSH CATERPILLAR (*Estigmene acrea*) 2. MISSISSIPPI - Stoneville, 2/28-3/27, temp. 29-80 F., precip. 7.73 inches, 2BL, armyworm 1,832, beet armyworm 1, black cutworm 404, saltmarsh caterpillar 2, variegated cutworm 316, yellowstriped armyworm 1. NEW MEXICO - Las Cruces, 3/17-24, BL, beet armyworm 27, variegated cutworm 3.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1974

(Continued from page 262)

MAN AND ANIMALS

Highlights:

SCREWWORM infestations were more serious in the beginning of 1974 than at the end. GULF COAST TICK was used as an indicator of screwworm infestation in southern Texas. COMMON CATTLE GRUB was noted throughout Alabama and was especially important on beef cattle. Populations were moderate to heavy in Oklahoma. Heavy HORN FLY populations were noted on cattle in Florida, Mississippi, Oklahoma, Texas, and New Mexico. FACE FLY became a major cattle pest in Alabama and the known 1973 distribution in Mississippi was exceeded by 50-75 miles. STABLE FLY in Florida was lighter than in 1973. Some severe annoyance to cattle was noted in Wisconsin. MOSQUITO populations in Florida were unusually heavy during summer. Bite collections in Indiana added 85 new county records for these pests. Biting problems in Michigan decreased. Populations of a BIBIONID FLY were lighter in Florida than in previous years. AMERICAN DOG TICK was taken in Vermont for a rare occurrence.

During 1974, there were 7,267 confirmed cases of SCREWWORM (Cochliomyia hominivorax) reported in the United States as follows: Texas 6,902; Arizona 197; New Mexico 99; California 48; Oklahoma 21; and Arkansas 1. The total number of cases reported in 1974 was a little less than half the cumulative total of 14,976 cases reported in 1973 and represents a reduction of 51 percent. Sterile screwworm releases in the U.S. in 1974 totaled more than 5.8 billion as follows: Texas 5.2 billion, New Mexico 87.7 million, Arizona 445.9 million, California 40.5 million, Oklahoma 2.9 million, and Arkansas 810 thousand.

Screwworm was more serious during the first half of 1974, especially in southern Texas, than at the close of the year. The reason was threefold: A higher degree of animal husbandry practices by livestock producers, a hot, dry spring and early summer, and most important of all, a very late season for Amblyomma maculatum (Gulf Coast tick).

During 1974, it was demonstrated how important the Gulf Coast tick population is to the presence or absence of a buildup of screwworm in southern Texas where annually most of the cases in the U.S. occur. Gulf Coast tick establishes an ideal environment for screwworm by providing an abundance of bloody wounds for this fly to begin its life cycle. Gulf coast tick usually begins to appear in July and disappears by mid-October. The increase and decrease of screwworm cases follows 3-4 weeks later. In 1973, ideal conditions contributed to one of the worst outbreaks of Gulf Coast tick in years. The unusually dry spring and early summer of 1974 delayed the appearance of this tick enough that by the time drought-breaking rains occurred the tick season was about over.

During the period January through July 1974, when Gulf Coast tick was generally absent, there were three times as many confirmed cases of screwworm in southern Texas as during the same period in 1973. During the period of August and September 1973, when Gulf Coast tick was heavy however, the number of cases was 25 percent higher than for the same period in 1974 and increased to about four times the number in the last 2 months of 1973 compared to the same time in 1974. Thus, with the number of screwworm cases reported in spring 1974, there could have been another screwworm outbreak this year if Gulf Coast tick had been as heavy as in 1973.

MOSQUITO populations in FLORIDA were unusually heavy during the summer of 1974. Heavy rains and high tides following a mild winter resulted in tremendous emergences of *Aedes taeniorhynchus*, *A. sollicitans*, *Psorophora confinnis*, *A. atlanticus*, *A. infirmatus*, and *Culex nigripalpus*. *A. taeniorhynchus* and *A. sollicitans* were extremely annoying in all coastal areas. *P. confinnis*, *A. atlanticus*, *A. infirmatus* and *C. nigripalpus* were not as much of problem in the western part of the State as in the Peninsular area. *Culex pipiens quinquefaciatus* was the most important vector of an outbreak of St. Louis encephalitis that occurred from Jackson, MISSISSIPPI, to the Tennessee State line. Forty-five suspected cases were reported in Mississippi with most occurring in Marshall, Tate, Tunica and DeSoto Counties.

Mosquitoes were noted to be among the most important pests of man and animals in ARKANSAS. *Psorophora confinnis* was heaviest with *Culex* spp. and *Anopheles* spp. being of lesser importance. Mosquitoes were economic pests of livestock and a nuisance to man. Insecticide treatments on livestock were very limited and of doubtful value. Losses were estimated at 8 million dollars due to decreased production. Mosquitoes were heavy in lowland areas of western TENNESSEE throughout the summer. Bite collections in INDIANA added 85 new county records, including the capture of *Aedes sollicitans* in Spencer County. This is the third county in the State in which it has been taken. Biting was severe in the northwest and north-central district fish and game areas during June.

Residents in most parts of MICHIGAN were spared the usual midsummer mosquito harassment in 1974. Early season species appeared on schedule in late May but cool weather in June reduced activity below normal levels. Hot, dry weather in July and August further reduced populations and resulted in very little standing water for development of *Aedes vexans*, one of the major pests of late summer. The first significant mosquito emergence in WISCONSIN began about May 15. Counts and biting problems increased steadily through May and into June when populations began to decrease. Cattle seemed to be bothered as much as man in some localities. Drought conditions during July and August reduced biting problems to very low levels except near permanent wetlands. *Aedes cinereus* and *A. vexans* were the predominant biting species.

Mosquitoes, mainly Psorophora spp., were abundant and annoying in many areas of OKLAHOMA during May, August, September, and October. Mosquito populations were about average throughout NEVADA, especially in irrigated valleys and along the Humboldt River where they are perennial pests. Aedes spp. and Culex tarsalis were generally the most common species encountered, with A. vexans developing unusually heavy populations in southeastern Clark County. A total of 107,416 acres were aerially treated in the Independent City of Carson and in Churchill, Douglas, Elko, Humboldt, and Lyon Counties during 1974, with 81,110 acres of this total being treated in Churchill County.

HORSE BOT FLY (Gasterophilus intestinalis) surveys were made on horses in north-central FLORIDA to determine the level of larval infestation. Of 76 horses surveyed, all were found to have this bot fly present at a heavy level in the stomach. Those counties found to have infestations include Alachua, Bradford, Citrus, Dixie, Highlands, Levy, Marion, Orange, Putnam, Sumter, and Volusia. The heaviest infestations were found in the northeastern corner of Marion County. Second-instar larvae of G. intestinalis were found at highest levels from January through June. Third instars were present throughout the year but were not found to be full grown until August and on through the latter part of November. Egg deposition by adult horse bot flies was first seen August 23 at McIntosh, Marion County. Adults were seen from August well into November, with the heaviest populations noted during September and October. Unusually low temperatures in the latter part of November and during December probably killed most remaining adults.

STABLE FLY (Stomoxys calcitrans), usually a nuisance chiefly along the gulf coast of FLORIDA, was overall lighter than the previous year. This is attributed to effective spraying, changes in wind direction at critical times, and partly to the fact the area experienced a drought during the summer and had earlier cool weather than usual. Only about two-thirds the amount of spraying for this pest was done this year as in 1973. Stable fly was apparent by May 15 in WISCONSIN and peaked during hot weather in July. The peak population observed was 15 per animal, but populations declined through August and September due to cooler weather. Annoyance was severe to cattle in some areas. Stable fly was a pest of man in several localities near lakes, particularly in northern districts, but was not great. Populations in NORTH DAKOTA reached 125 per animal by July 19 on steers on dry lots in Cass County.

Stable fly ranged 3-4 per leg on feedlot animals in Arthur, Lincoln, and McPherson Counties, NEBRASKA, July 24. The heaviest population occurred about August 23-30 in McPherson, Cherry, Lincoln, and Keith Counties. Stable fly was active from early April to early November in OKLAHOMA. Counts reached 5 per head on Payne County dairy cattle in mid-June and again in early September. Heavy populations were reported in Jackson County in mid-May and in Wagoner County in late July.

HOUSE FLY (*Musca domestica*) populations were about the same as 1973 in the Gainesville area of FLORIDA, ranging 5-10 per animal. It continued to be a pest of poultry operations, averaging about 70 flies per 4-inch by 8-inch pupation trap placed in each poultry house. House fly was heavy in a commercial cattle feed lot in Polk County during May. Populations were moderately heavy by May in WISCONSIN and spraying of dairy barns had begun by May 20 in some areas. Populations increased steadily until mid-July when a large increase was noted. Cool weather in August reduced development and adults entered buildings on cool evenings, which resulted in increased annoyance to occupants. By mid-September activity was intense due to cold outdoor temperatures. Populations declined to low levels by mid-October. House fly was active around barns and feeding areas from early April to early November in OKLAHOMA. The heaviest populations in untreated barns in Payne County occurred in mid-May and mid-October. Flies were entering homes in large numbers in some areas by late August.

FACE FLY (*Musca autumnalis*) adult populations were lighter in VIRGINIA during 1974 with only a few reports on animals or in houses. Populations reached 28 per untreated animal June 14, and held steady until frost in Washington County. This species became a major cattle pest in extreme northern ALABAMA and exceeded the heavy populations first recorded in 1973. Complaints indicated infestations occurred in 15-20 northern counties. Treatments were difficult. The first flies of the season in MISSISSIPPI were found on cattle in Monroe County the week ending April 5, with an average of one per face. Populations remained below 3 per face through mid-May in Monroe, Chickasaw, and Calhoun Counties. Infestation levels increased through June and by late July averaged 25 per face on beef cattle in Monroe, Chickasaw, and Lee Counties, with some cattle having 60-100 per face. Infestations began to decline in September and flies disappeared from cattle by mid-November. A most important point of the 1974 season is that face fly extended its known 1973 area of distribution by 50-75 miles and was found in Noxubee, Winston, Choctaw, Webster, Montgomery, Grenada, Yalobusha, Lafayette, Union, Prentiss, Tishomingo, Alcorn, Tippah, Benton, and Marshall Counties for 15 new county records.

Face fly was generally light in early summer and moderate to heavy in mid and late summer in TENNESSEE. Pinkeye which is throught to be associated with *M. autumnalis*, was common in herds where *M. autumnalis* was observed in the middle and eastern areas. Blindness often was the result when pinkeye and face fly controls were not applied. Face fly populations appeared to peak on cattle in July in central KENTUCKY. Adults ranged 25-33 per animal during periods of peak populations compared to 50-75 per animal during peak periods in 1973.

Face fly was present on cattle in southwest WISCONSIN in late April, apparently favored by the preceding mild winter. Annoyance was severe to cattle in a few areas, with peak populations of 15 per face observed. Controls began in mid-May and continued through September in many counties. Populations averaged 2 per face on calves in Richland County, NORTH DAKOTA. Up to 75 face fly adults per animal were common throughout SOUTH DAKOTA. Numerous cases of pinkeye were reported in calves and older cattle. Populations ranged 0-4 per head on pastured cattle in southern IOWA counties during the week ending May 3. Populations were light on most cattle through early July. By mid-July up to 20 per head were noted on control-area herds. During early August, populations increased to 35 per head, and by mid-August ranged 5-55 (average 19) per head. Populations decreased during mid-September to noneconomic levels.

Face fly averaged 4 per head on river bottom and irrigated pastures in Lincoln and Keith Counties, NEBRASKA, in June. Populations gradually increased to a maximum of 15-20 per head on August 16. Face fly and Haematobia irritans (horn fly) were heavy on scattered herds of range cattle over much of KANSAS from late August through early October. Moderate to heavy face fly activity was reported on cattle in northeast OKLAHOMA from mid-August to early October. This livestock pest was found for the first time in Tulsa and Wagoner Counties.

Heavy and annoying populations of face fly were present from Juab County northward in UTAH. Horses in particular were annoyed and only moderate control was attempted. Adult populations were heavy in buildings in Elko County, NEVADA, in late October and November.

HORN FLY (Haematobia irritans) populations on cattle at Gainesville, Alachua County, FLORIDA, carried through the winter of 1973 and 1974 at up to 150 flies per animal, but were destroyed by a heavy frost in mid-February. By mid-May, counts had returned to 150+ per animal and continued to increase up to 525 per animal by June 13. After that, populations decreased to a maximum of 212 per animal until about July 3 when a general increase was seen to 380 per animal. Populations further increased to a peak of 785 flies per animal August 28 then decreased fairly rapidly to November 21 when populations were about 200 per animal. Populations ranged 170-442 per head on cows and up to 2,500 on bulls during early season in Okeechobee County from March 6 to April 11 on range beef cattle under woodland pasture conditions. Populations increased during late summer and were approaching the usual early fall peak of 600 flies per crossbred steer in the Belle Glade area of Palm Beach County.

Annoying and damaging horn fly infestations occurred throughout the fly season, beginning in late March in southern ALABAMA. Infestations were limited mainly to beef cattle herds where proper treatments were not applied. The first adults in MISSISSIPPI were found on cattle in Oktibbeha County the week ending March 15. A peak of 100+ adults per head was found on beef cattle in Oktibbeha, Chickasaw, and Monroe Counties the week ending April 5. Populations began increasing again in early May and by the end of May were up to 1,000+ per head on cattle in Oktibbeha, Clay, Chickasaw, Monroe, Grenada, and Yalobusha Counties. During August, populations were down to 300+ per animal but increased to above 1,000+ in September. Populations began declining and the last adults were found on Oktibbeha County beef cattle the last week in November. Horn fly populations during 1973 were much lighter than in 1974 in KENTUCKY. Populations on cattle in the central area peaked the last half of July and ranged 300-500 adults per animal.

Haematobia irritans was a major pest of livestock in ARKANSAS, mainly cattle. It occurred statewide and was heavy from April until frost in early November. Treatments were effective but not applied universally. Control cost plus loss in production is estimated at 15 million dollars annually. In IOWA, the first reports were on pastured cattle in southern counties during the week ending May 3, with counts up to 50 per head. By the week ending May 31, populations ranged up to 100 per head on central area herds. During early June, 200 per head were noted in the central area but the average remained light at 50 per head. Light populations were noted through mid-July at which time counts increased up to 200 per head with an average of nearly 100 per head. Although animals in certain herds had heavy populations, light noneconomic populations were present the rest of the summer.

Horn fly was first noted in WISCONSIN May 8 in Waushara County. Activity peaked during hot weather in July and declined through August and September. Nuisance to cattle was only moderate, with peak counts of 150 per side. Controls were begun in mid-May and continued through September. Horn fly infestations in NORTH DAKOTA reached 500 per animal on cattle in Richland County by June 14, and 1,000 per animal by June 21 in McKenzie County. This pest was still a problem September 6 on cattle in Billings County with up to 400 flies per animal present. Up to 200-300 flies per side were common on untreated animals in eastern SOUTH DAKOTA. Populations averaged 25 per animal in Lincoln, Logan, and McPherson Counties, NEBRASKA, May 1. Populations continued to increase, peaking about August 8 in Keith, Arthur, McPherson, Lincoln, Logan, and Dawson Counties at 400-500 per head. Populations had begun to decline by August 15.

Horn fly infested cattle in OKLAHOMA from early March to late November. Heavy spring populations of 700 per head occurred in late May in Payne County followed by a rapid decline during June. Counts averaged 300 or less per head in most areas during July and August, but a few counts of 600-1,000 per head were reported in scattered counties. Somewhat heavy populations were present in September and early October with a high of 800-1,500 per head reported in Major County in late September. Populations increased rapidly in south-central TEXAS during late April. Infestations ranged moderate to heavy in south-central and central counties during the first part of May. By early June, populations were reported throughout the State. The heaviest infestations were reported in the Trans-Pecos area where populations ranged up to 2,500 per head.

H. irritans ranged 200-300 per head in mid-June in Lincoln and Eddy Counties, NEW MEXICO. Up to 1,000 per animal were noted September 1 in Grant and Catron Counties. Populations were generally annoying to cattle throughout UTAH, being especially heavy in parts of Washington and Kane Counties.

COMMON CATTLE GRUB (*Hypoderma lineatum*) was present throughout ALABAMA and especially important as a pest of beef cattle. Populations and resulting damage were about the same as in the past 4 years, ranging light to moderate. This was probably due to better and more widespread use of proper insecticides. Infestations in NORTH DAKOTA ranged 1-45 (average 7.1) grubs per animal on 13 percent of the animals examined at Dickinson, Mandan, Minot, Rugby, and Turtle Lake livestock auctions March 18-29, 1974. Adults were running cattle in Stark, Williams, and Mountrail Counties by June 21. Moderate to heavy populations of common cattle grub were present in the backs of cattle in most areas of OKLAHOMA through early March. The heaviest count reported was 53 per head in Comanche County. Adult activity was reported from mid-February to early April. First larvae in the backs of cattle in the fall were reported from Major County in mid-November and at least one heavy infestation had been found by the end of November in Comanche County. Common cattle grubs ranged 10-40 per back in range cattle in Torrance County, NEW MEXICO.

SHEEP BOT FLY (*Oestrus ovis*) puparia were noted May 15 in Warren County, INDIANA, and second-generation adults were noted July 13. Populations decreased to nearly nil in 1974 following heavy populations for the past 3 years.

The first activity by TABANID FLIES (*Chrysops* spp.) in WISCONSIN was reported in Dane County about June 5. Wet conditions in June favored development and annoyance to man, livestock, and deer was severe on warmer days through mid-August when drought conditions finally dried most breeding areas. HORSE FLIES (*Tabanus* spp.) were heavy, up to 6 per head, on cattle in scattered areas of OKLAHOMA between mid-June and mid-August. The common species were *T. lineola* (striped horse fly), *T. abactor*, *T. sulcifrons*, and *T. atratus* (black horse fly).

A HIPPOSCID FLY (*Hippobosca longipennis*) was still present in the San Diego Wild Animal Park in CALIFORNIA. Eradication treatment was underway late in 1974.

The spring flight of a BIBIONID FLY (*Plecia nearctica*) was much lighter in northern FLORIDA (north of Orlando and Tampa) than in previous years. The population increased in the area from Vero Beach, Indian River County, to Jupiter in northeast corner of Palm Beach County. The fall flight was noticeably lighter in northern Florida than in past years but was heavy in the southern area encompassed within Vero Beach, Jupiter, and Okeechobee. Adults were trapped as far south as Dade County, thereby extending the known range from the previous limit of northern Palm Beach County. On the gulf coast, moderately heavy infestations were observed south of Tampa, Hillsborough County, to Ft. Myers, Lee County. Isolated areas north of Tampa were noted as having moderate populations.

WESTERN BLACK WIDOW SPIDER (*Latrodectus hesperus*) developed heavy populations in the western and southern counties of NEVADA. From September through early November large numbers moved into buildings in these areas. Several persons were reported to have been bitten by this spider.

AMERICAN DOG TICK (Dermacenter variabilis) was collected from the neck of a child in Washington County, VERMONT, May 29, 1974. Reports of this species are very rare in the State. Activity was noted as far north in WISCONSIN as Oconto County by April 20. Annoyance to man and his pets was fairly heavy in Adams, Washburn, and Chippewa Counties, but was normal or below normal in all other areas. Populations began to decline late in June and few problems were reported after mid-July. D. variabilis infested horses by April 27 in Cass County, NORTH DAKOTA.

LONE STAR TICK (Amblyomma americanum)and Dermacentor variabilis were the main vectors of the 18 cases of Rocky Mountain spotted fever reported in MISSISSIPPI in 1974. No deaths were recorded. This is less than the 33 cases reported in 1973. Moderate lone star tick populations were reported active on cattle in Atoka County, OKLAHOMA, by mid-March and heavy populations were present in eastern areas of the State during May and June.

Moderate to heavy WINTER TICK (Dermacentor albipictus) populations were reported on cattle and horses in several eastern counties of OKLAHOMA in January, February, and November.

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) were a very serious problem in DELAWARE. The first swarms occurred during early March. EASTERN SUBTERRANEAN TERMITE (R. flavipes) is one of the most costly insect pests in MARYLAND. Estimates of damage in 1974 range into the millions of dollars. Swarming activities during spring were more irregular and much below average. Eastern subterranean termite continued as the major structural pest throughout ALABAMA. Damage and control costs rank it among the top 5 economic insects in the State. Damage and control costs exceed 12 million dollars annually. Reticulitermes spp. reproductives were swarming in Major County, OKLAHOMA, by mid-February, but swarming occurred generally in most areas of the State during March and April.

HOUSE CRICKET (Acheta domesticus) was collected from kitchen refuse in Langlade County, WISCONSIN, during fall 1973. Determined by R.D. Shenefelt. This is a new State record.

FIELD CRICKETS (Gryllus spp.) were reported entering towns and buildings in several west-central, southwest, and east-central counties of OKLAHOMA the first half of September.

STORED PRODUCTS

A WEEVIL (Cleonus piger) a pest of sugarbeets in eastern Europe, was found for the first time in MICHIGAN August 23, 1974, apparently having been picked up in a field of oats at harvest. It was also found in oats in storage. This weevil has several common weed hosts.

BENEFICIAL INSECTS

AN ICHNEUMONID WASP (*Bathyplectes curculionis*) was reared from *Hypera postica* (alfalfa weevil) larvae collected near Franklin, Macon County, and Leicester, Buncombe County, NORTH CAROLINA by T.N. Hunt April 25, 1974. Determined by W.V. Campbell. These are new county records. A survey indicated an increase in the percent of parasitism in Rowan, Wake, and Ashe Counties since 1972. Heaviest parasitism, 58 percent, was noted in a Rowan County field. *B. curculionis* was released during 1971 in Wake, Rowan, and Ashe Counties. This ichneumonid wasp usually parasitized only 1-2 percent of the samples of *Hypera postica* larvae collected in early May in several northeast and north-central district counties of KANSAS, but up to 59 percent weevil parasitism was reported in late May in Douglas County. *B. curculionis* was reared from 10-35 percent of *Hypera postica* larvae collected from the Panhandle of OKLAHOMA in mid-April.

A BRACONID WASP (*Lysiphlebus testaceipes*) was the most important biotic control agent against *Schizaphis graminum* (greenbug) on sorghum in KANSAS during 1974. More often than is usual during a growing season, however, it could be found in small populations for long periods in greenbug-infested fields before it began increasing to levels sufficient to give good control. *L. testaceipes*, parasitized greenbug in wheat in southwest and west-central OKLAHOMA by late January. This braconid wasp was numerous enough to bring *S. graminum* under control in many of these counties by mid-February. It again exerted control of *S. graminum* on sorghum in the west-central counties by late July and the Panhandle Counties by mid-August.

A EULOPHID WASP (*Aphelinus nigritus*) was important in aiding in the control of *Schizaphis graminum* (greenbug) in sorghum in the Panhandle of OKLAHOMA during August. Another EULOPHID WASP (*Tetrastichus incertus*) was reared from *Hypera postica* (alfalfa weevil) larvae collected near Leicester, Buncombe County, April 25, 1974, by T.N. Hunt. Determined by C.V. Campbell. This is a new county record.

ALFALFA LEAFCUTTER BEE (*Megachile rotundata*) populations in alfalfa-seed producing areas of Churchill, Humboldt, and Pershing Counties, NEVADA, continued to decline. This decline was not due to any single factor, but to a combination of factors including losses due to parasites, predators, nest destroyers, and pesticides. Additionally, a fungus (*Ascosphaera* sp.), commonly known as "chalkbrood disease," was found for the first time in Nevada in the cells of this pollinator. At the present time its exact status in relation to this bee is unknown and the species involved has not been resolved. Very heavy populations of a SAPYGID WASP (*Sapyga pumila*) infested leafcutter bees in the seed-growing areas of southwestern IDAHO. This wasp is a major threat to bee production in the State.

CONVERGENT LADY BEETLE (*Hippodamia convergens*) was the most common coccinellid in alfalfa in the Gainesville area of Alachua County, FLORIDA, and also was common on truck crops in the area. A moderate population was present throughout a 100-acre planting of southern peas in Jackson County during May. Convergent lady beetle was active in wheat in west-central OKLAHOMA by mid-January and aided in the control of *Schizaphis graminum* (greenbug) in southwest and west-central counties by early March. It also exerted control on *Acyrthosiphon pisum* (pea aphid) in alfalfa in April and *S. graminum* on sorghum in August. Activity continued through most of November.

Convergent lady beetle was often very heavy and the most prevalent beneficial species in alfalfa, corn, sorghum, and wheat surveyed in KANSAS. It was often found in large numbers feeding on *Rhopalosiphum maidis* (corn leaf aphid) on sorghum in June and July and on *S. graminum* in July and August. Convergent lady beetle, along with other coccinellids, particularly *Coleomegilla maculata* and *Scymnus* spp., were more helpful than usual in controlling *S. graminum* on sorghum in July and August. Unspecified LADY BEETLES were generally moderate in cultivated fields where aphids were present in UTAH. At times they were heavy on fruit and shade trees when aphids became heavy.

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

The excellent BOLL WEEVIL (*Anthonomus grandis*) control program in western TEXAS during 1973 resulted in light populations coming out of hibernation in spring 1974. About 591,000 aggregate acres of cotton were treated in the High Plains of Texas and 7,000 acres in the Big Bend area of Texas and Mexico during 1974 at a cost of $1.43 per acre compared to $1.27 per acre in 1973. Excellent control during 1974 prevented heavy buildups on top of the Cap Rock. Good control was also obtained in the Big Bend area of Texas and Mexico along the Rio Grande. Natural spread of boll weevil has been prevented since the control program was initiated in 1963 when evidence indicated that this pest was surmounting natural barriers.

BURROWING NEMATODE (*Radopholus similis*) was identified as the cause of spreading decline of citrus in FLORIDA in 1953. During calendar year 1974, a total of 158 acres of citrus was treated and pushed, 45,799 linear feet of barriers were established, and 578,848 linear feet of barriers were maintained. Two resistant root stocks, Milam and Ridge pineapple, are now available. Growers are now required to pay all expenses for barriers that protect citrus on their own land. Growers and the State are expected to take an increasing percent of program costs each year.

The CEREAL LEAF BEETLE (*Oulema melanopus*) Federal quarantine was terminated October 1, 1973. During calendar year 1974, biometrical surveys were conducted to detect infestations in major host crops to the west of the known infested area. Population surveys were conducted in known infested States to select parasite release sites. Field insectaries were maintained in infested States to produce parasites for release where cereal leaf beetle populations exist. During 1974, more than 40,000 acres were surveyed at about 4,000 sites. A total of 634 counties is known to be infested in 16 States.

Anaphes flavipes (a mymarid wasp), an egg parasitoid, is reared at the cereal leaf beetle laboratory at Niles, Michigan, for field release. It is now well established in much of the infested area. One or more of 4 larval parasitoids, *Tetrastichus julis* (a eulophid wasp) and *Diaparsis carnifer*, *Diaparsis* sp., and *Lemophagus curtus* (ichneumonid wasps), are established in each of

23 field insectaries located in 9 States. Parasites were released at 424 sites during 1974.

CITRUS BLACKFLY (*Aleurocanthus woglumi*) was found to infest 3,777 citrus trees of 189,992 examined in TEXAS. An aggregate of 178,093 trees was treated. In Mexico, 10,785,634 citrus trees were examined, with 152,494 found infested with citrus blackfly. Emergency measures were initiated early in 1974 to control and suppress populations in the lower Rio Grande Valley to allow for integrated biological control in certain areas such as Brownsville, Texas. Parasite colonization is well established in Brownsville and in Matamoros, Mexico.

GIANT AFRICAN SNAIL (*Achatina fulica*) was first found in FLORIDA at North Miami in September 1969. Cooperative eradication treatments with the State were begun in November 1969. The snail was found in 9 residential localities in Dade and Broward Counties. Of the 9 infestations, 6 have been negative for this snail during surveys for more than 2 years and have been released from regulation. Treatment was made on a total of 759 properties. The last new infestation was detected in July 1972, and the last snail was found in April 1973. Eradication will have been achieved in April 1975, two years after the last snail find, if no snails are detected before that date.

Surveys for GOLDEN NEMATODE (*Heterodera rostochiensis*) were made on 29,107 acres in 32 States during 1974. On Long Island, NEW YORK, 1,200+ acres remain infested but are in nonhost crops. All infested cropland on Long Island and in Wayne County, New York, has been fumigated or is scheduled for fumigation. All known infestations in Steuben County have been treated, except for a research farm.

About 817,000 acres were sprayed for GRASSHOPPER control in six Western States during 1974. Controls were applied to 618,000 in WYOMING alone. Suppressive treatments for MORMON CRICKET (*Anabrus simplex*) were required on about 34,000 acres in NEVADA and MONTANA. Grasshopper adult surveys in fall 1974 showed a total of 6 million acres of infested rangeland in 16 Western and Midwestern States. This represents the lowest acreage supporting economic grasshopper populations since 1960. Nymphal surveys in spring 1975 will indicate where control may be required.

Detection surveys for GYPSY MOTH (*Porthetria dispar*) were conducted in 40 States during the 1974 season. About 70,000 traps were placed, 10,000 of these being handled by the National Campers and Hikers Association. Male moths were detected for the first time in MISSOURI and WASHINGTON. Moths were trapped in 49 counties in 17 States. Egg masses were found outside the generally infested area only in MICHIGAN.

During calendar year 1974, more than 7 million acres were surveyed in 13 Southeastern and South Central States for IMPORTED FIRE ANTS (*Solenopsis invicta* and *S. richteri*). A total of 10,210,700 acres were treated in six States.

About 36,000 traps were again in operation during 1974 to detect new infestations of JAPANESE BEETLE (*Popillia japonica*). Adult beetles were trapped for the first time in 30 counties in 10 States. Several of these trap catches were single beetles found in situations indicating they were "hitchhikers." Three adult beetles were trapped outside the treated area in San Diego, CALIFORNIA, where an infestation was detected in 1973. State personnel treated 100 acres of turf at one of the 1974 positive trap sites located at an airfield serving the San Diego area.

Hazardous adult Japanese beetle populations necessitated treatment of 197 aircraft at Dover Air Force Base at Dover, DELAWARE, and 139 aircraft at McGuire Air Force Base at Wrightstown, NEW JERSEY. Foliar sprays were applied to about 5,000 acres to prevent buildups of adult populations at several airports and transportation sites. A biometrically designed field test to determine the potential of traps as a control tool was continued in TENNESSEE. Three beetles were trapped in 1974. The test will be continued in 1975.

About 100 fumigations were required to allow entry into the United States of products or carriers found infested with KHAPRA BEETLE (*Trogoderma granarium*). All suspect collections within the United States were negative.

A total of 16,070 traps were used in the United States and 3,483 traps in Mexico to detect MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*). Many of these traps were multipurpose to detect other fruit flies, such as ORIENTAL FRUIT FLY (*Dacus dorsalis*), MELON FLY (*D. cucurbitae*), QUEENSLAND FRUIT FLY (*D. tryoni*), and NATAL FRUIT FLY (*Ceratitis rosae*). Mediterranean fruit fly was not detected in the continental United States or Mexico during 1974. A joint emergency action program with Mexico has been formulated in the event *C. capitata* moves northward from Central America.

Detection surveys for MEXICAN FRUIT FLY (*Anastrepha ludens*) included the use of 3,035 McPhail traps in the 5 citrus-producing States in the U.S., and in Puerto Rico and northwest Mexico. To monitor the effect of sterile fly releases, 412 McPhail traps were operated in northwest Mexico. In Mexico, 4,750,000 sterile flies were released in Baja California del Sur to eradicate an infestation at La Paz. Each week for 12 weeks, 50,000 to 100,000 sterile flies were released for a low-level infestation in Dimmit County, TEXAS. In northwest Mexico and CALIFORNIA, 18,720,000 sterile flies were released during 1974. During the year, 147,143,875 pounds of host fruits were fumigated in Mexico to permit movement to the United States and to noninfested areas of Mexico.

A single male ORIENTAL FRUIT FLY (*Dacus dorsalis*) was trapped in Panorama City, Los Angeles County, CALIFORNIA, September 17, 1974. A male annihilation program was initiated immediately, which called for four applications of toxic lure bait to be squirted on tree trunks, fences, and utility poles at a rate of 3-5 milliliters per station to at least 600 stations per mile. These applications were made at 2-week intervals. The trapping program continued to monitor the eradication results for negative findings which must extend for 3 fly generations (100 days).

An infestation of oriental fruit fly was also detected in Clairemont, San Diego County, California, September 6, 1974. This is the first larval infestation of this fruit fly that has occurred on the U.S. mainland. Male and female annihilation programs were initiated immediately. A toxic food bait is used in the female annihilation program. The bait is squirted at the rate of 3-5 milliliters per station with 6,000 stations per mile. Establishment of 224,000 bait stations was made in the 134-square-mile area around the original fly find. This was the fourteenth time oriental fruit fly has been detected in California in 14 years.

About 37 million sterile PINK BOLLWORM (Pectinophora gossypiella) moths were released in the San Joaquin Valley of CALIFORNIA to prevent establishment of populations of economic importance. About 36,000 traps were used for detection and monitoring sterile insects in the valley. Larvae have not been found in the valley since 1970. Biometrically designed detection surveys were conducted in noninfested States.

During the first 6 months of 1974, about 34 million sterile pink bollworm moths were released in FLORIDA to control isolated populations in wild cotton. About 10 million sterile moths were released during the last half of the year. Moth production at the Texas facility was temporarily diverted to the California program. Two parasites were released and one was recovered at low levels, but evaluation is incomplete.

RANGE CATERPILLAR (Hemileuca oliviae) developed economic populations in Harding and Union Counties in northeastern NEW MEXICO. No control was necessary as these populations were small and scattered. Economic infestations also occurred on about 10,000 acres of rangeland in Lincoln County, but populations were too far advanced to justify an organized control effort.

A new infestation of WEST INDIAN SUGARCANE ROOT BORER (Diaprepes abbreviatus) was found in a 2-acre nursery in Davie, Broward County, FLORIDA, during September 1974. During the year, State and Federal personnel soil treated 105 acres and foliage treated 9,640 aggregate acres. Since the beginning of the program, 200+ acres of citrus have been abandoned or cleared due to this pest. Movement of regulated items is controlled under a State quarantine. Biometric surveys were conducted within the regulated area and in a 25-mile radius outside the area. During the 1974 season, 20,946 acres were surveyed. A new infestation was detected in 182 acres of citrus at Apopka, Orange County. A total of 3,876 acres are known to be infested. A dip was developed for allowing nursery stock to move out of the regulated area.

During 1974, about 20,000 acres were surveyed for WHITEFRINGED BEETLES (Graphognathus spp.) of which 1,200 acres were designated infested. Beetles were found for the first time in 9 counties in 6 States. The Federal quarantine was revised June 18, 1974, to include KENTUCKY, MISSOURI, and TEXAS, to delete certain regulated articles, and to change conditions under which other articles are regulated.

WEATHER OF THE WEEK ENDING MARCH 31

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HIGHLIGHTS: For the week of March 24-30, blizzard conditions plagued the northern Plains early in the week and again on Thursday and Friday. Winds over 50 m.p.h. and heavy snow blinded much of the Dakotas and Minnesota. Although the blizzard caused considerable damage and inconvenience it did bring some much needed moisture to the previously dry areas. Colder air moved southward behind each of the storms.

PRECIPITATION: Early Monday, a deep Low was centered over Iowa and moving northeastward. A front extended south from Michigan through Louisiana. A warm front reached from Michigan to North Carolina. Rain was falling in the Great Lakes area, freezing rain in Wisconsin,and snow from Minnesota to Montana. Blizzard conditions existed in the eastern Dakotas as winds exceeded 50 m.p.h., temperatures dropped into the teens, and heavy snow fell. Elsewhere, severe weather in the form of heavy showers and thunderstorms occurred ahead of the front in the South. Tornadoes were reported near Columbus, Mississippi, and Huntsville, Alabama. The Low center moved into southeastern Canada on Tuesday morning and, accompanying the frontal system, moved into the Atlantic. Snow continued in southeast Minnesota, Wisconsin, and Iowa, and snow showers occurred in Illinois, Indiana, and Michigan. A Pacific front moved onshore and advanced to southeast Oregon and central California. Rain fell in California with larger amounts occurring in the north. Rain and snow showers accompanied the front into the mountains. By Wednesday, the intense Low center had moved into the Atlantic, but strong circulation around it was causing snow showers south of the Great Lakes to the Allegheny Mountains. The Low pressure system from the Pacific moved to south-central Colorado and began deepening as cold air from Canada surged southward behind it. An area of snow in Montana and Wyoming was spreading into the Dakotas. Snow showers were reported throughout the eastern Rockies and into Arizona. Thursday morning found the deep Low in northwest Kansas with cold air bound by a front that extended from the Low center through central Texas. A warm front reached southeastward through Louisiana. A High pressure system in the East was holding firm, causing strong circulation around the Low. Rain fell north of the warm front from Oklahoma to southern Illinois, and snow from northern Illinois westward to Montana and Wyoming. Colorado had some snow in all but the dry southeast, and southwest Kansas had little precipitation. Blizzard conditions accompanied the intense storm as it moved to eastern North Dakota Friday morning. Snow continued to fall from Montana to Wyoming to Upper Michigan as winds gusted to over 50 m.p.h. Ten to sixteen inches of snow had been dumped in many parts of the Dakotas since Thursday morning. Rain moved eastward into Kentucky, Tennessee, Indiana, Ohio, and West Virginia. The storm moved into Canada north of Lake Superior on Saturday, and cold air had moved to a frontal boundary that extended from the Low southward through Tennessee and Louisiana. A warm front extended from Lake Erie through northern Maryland. Snow was still falling west of the Low to Minnesota and rain and thunderstorms occurred all along the front producing some hailstorms in the South. Flooding of some streams was reported in Kentucky, Tennessee, and West Virginia. Another weather system was spreading snow from New Mexico across northwest Texas into Oklahoma. The cold front made a wet Easter Sunday in much of the Eastern United States. Rain fell from southern New England to the Mid-Atlantic States and scattered thundershowers from the Carolinas to the central gulf coast. A new storm system was building in southwest Canada and was threatening the northern Plains with more snow.

TEMPERATURE: All but the extreme Southeast United States had average temperatures below normal for the week. The area of greastest departure from normal was from the Dakotas to Utah where the week averaged 13 to 18 degrees below normal. The week began with a cold mass of air enveloping the West from Minnesota to Texas and westward. Minot, North Dakota, measured below zero Monday morning. The cold air moved eastward and by Wednesday warmer air was moving northward into the Plains. McAllen, Texas, measured 86 Wednesday afternoon. The warming was short lived as another surge of cold air swept southward behind the deepening Low in Kansas on Thursday. By Friday, the cold air had moved to the Mississippi River. The 20's reached as far south as northwestern Texas. In the East, temperatures ranged from the 30's at the Canadian border to the 80's in Florida. Cold air continued to move into the West where the Pacific coast temperatures reached only from 50 to 60. By Easter Sunday, the cold air had covered the Nation except for the Southeast. On Sunday, the lowest temperature for so late in the season was recorded at Lubbock, Texas, with an 18-degree reading. Winslow, Arizona, measured 14 degrees in contrast to a summery 90 which was the high at Orlando, Florida.

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